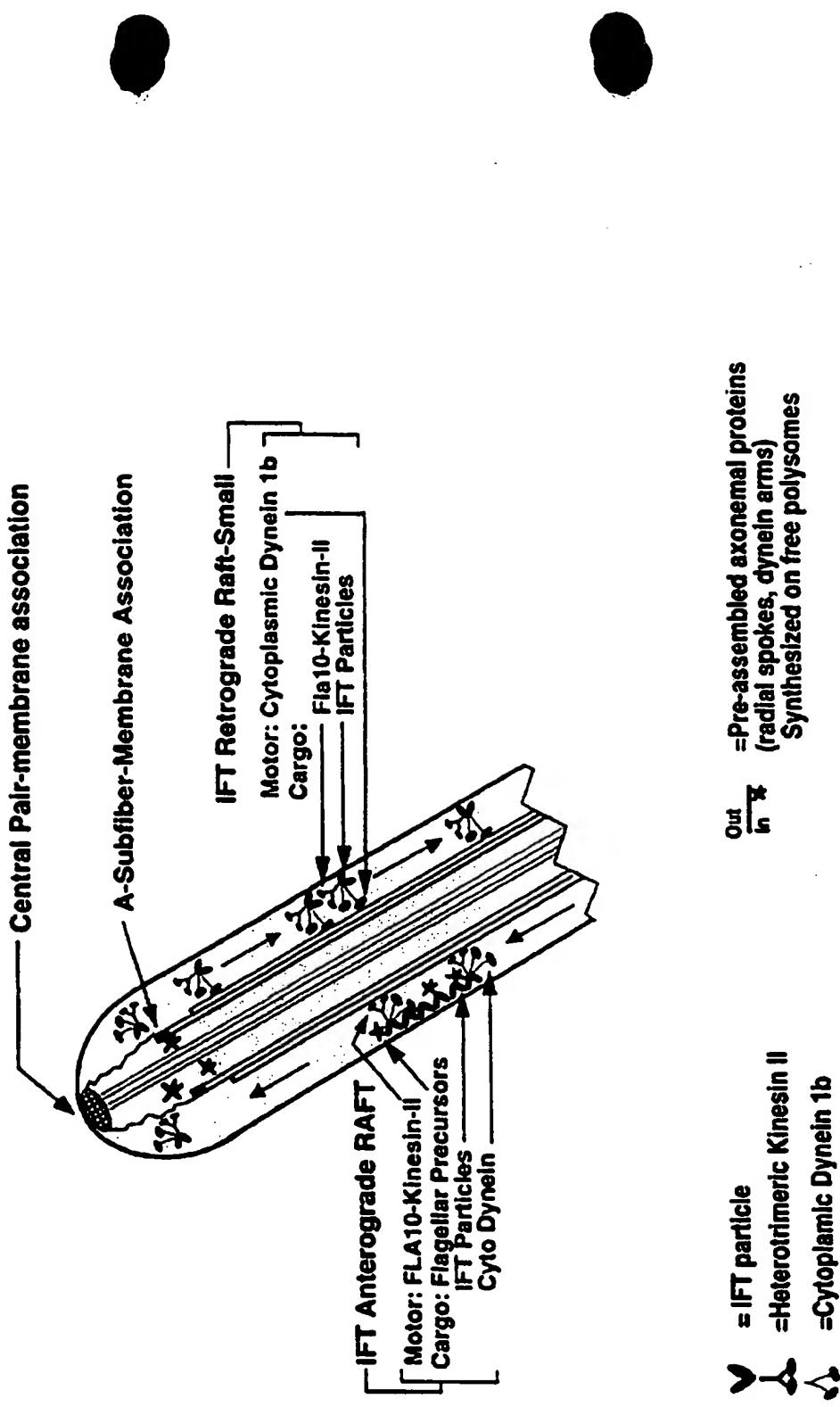


FIG. 2



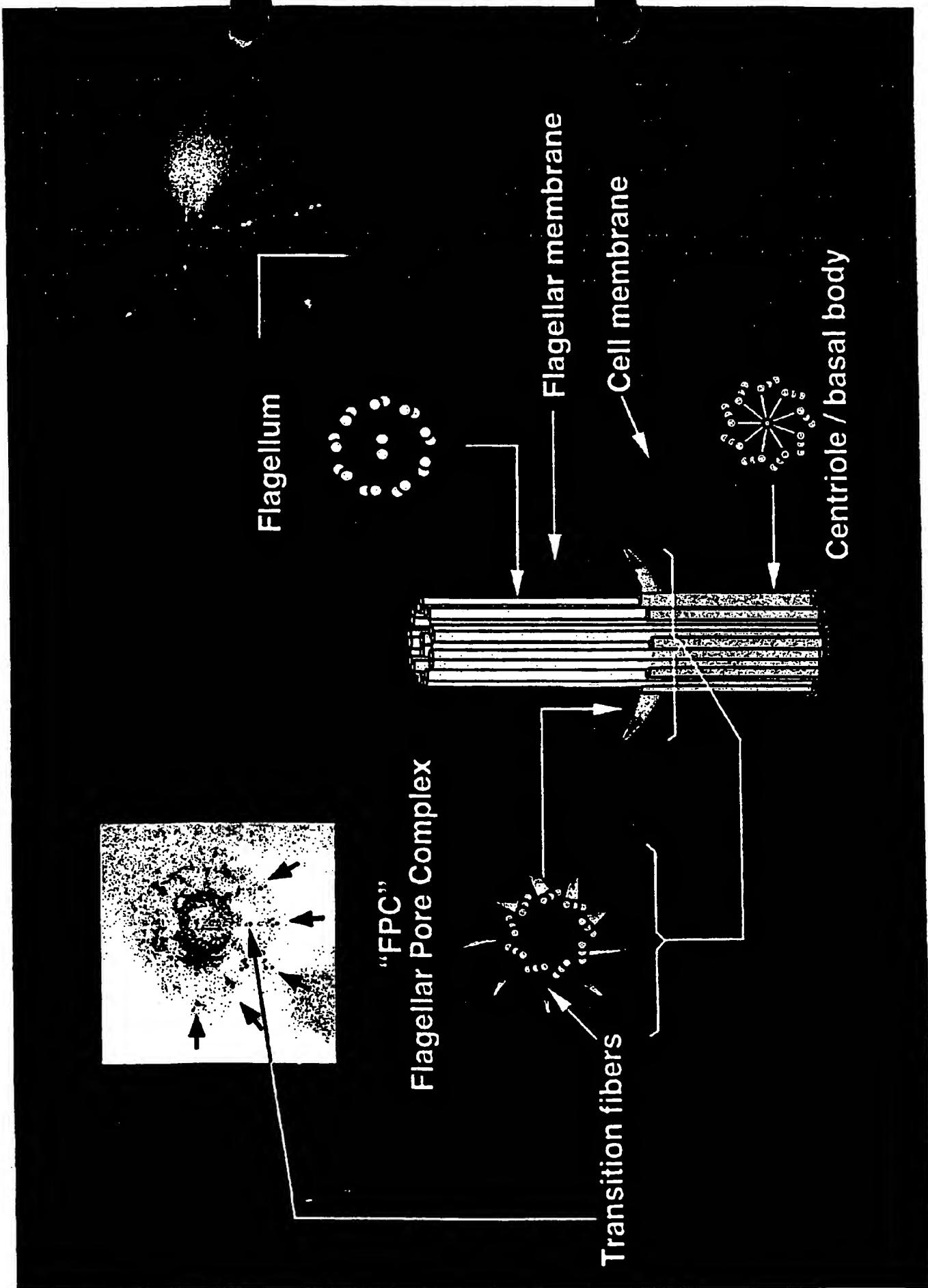


FIG. 3

BEST AVAILABLE COPY

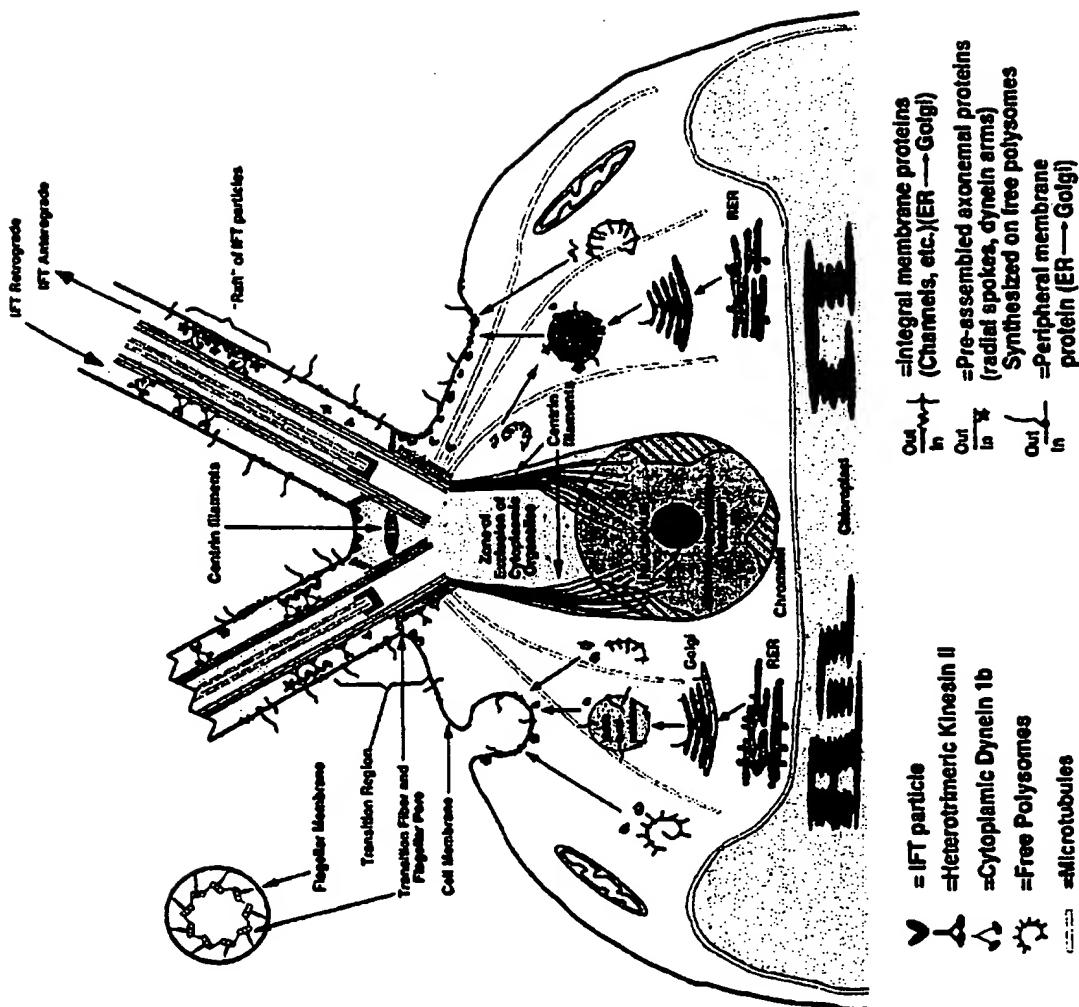


FIG. 4

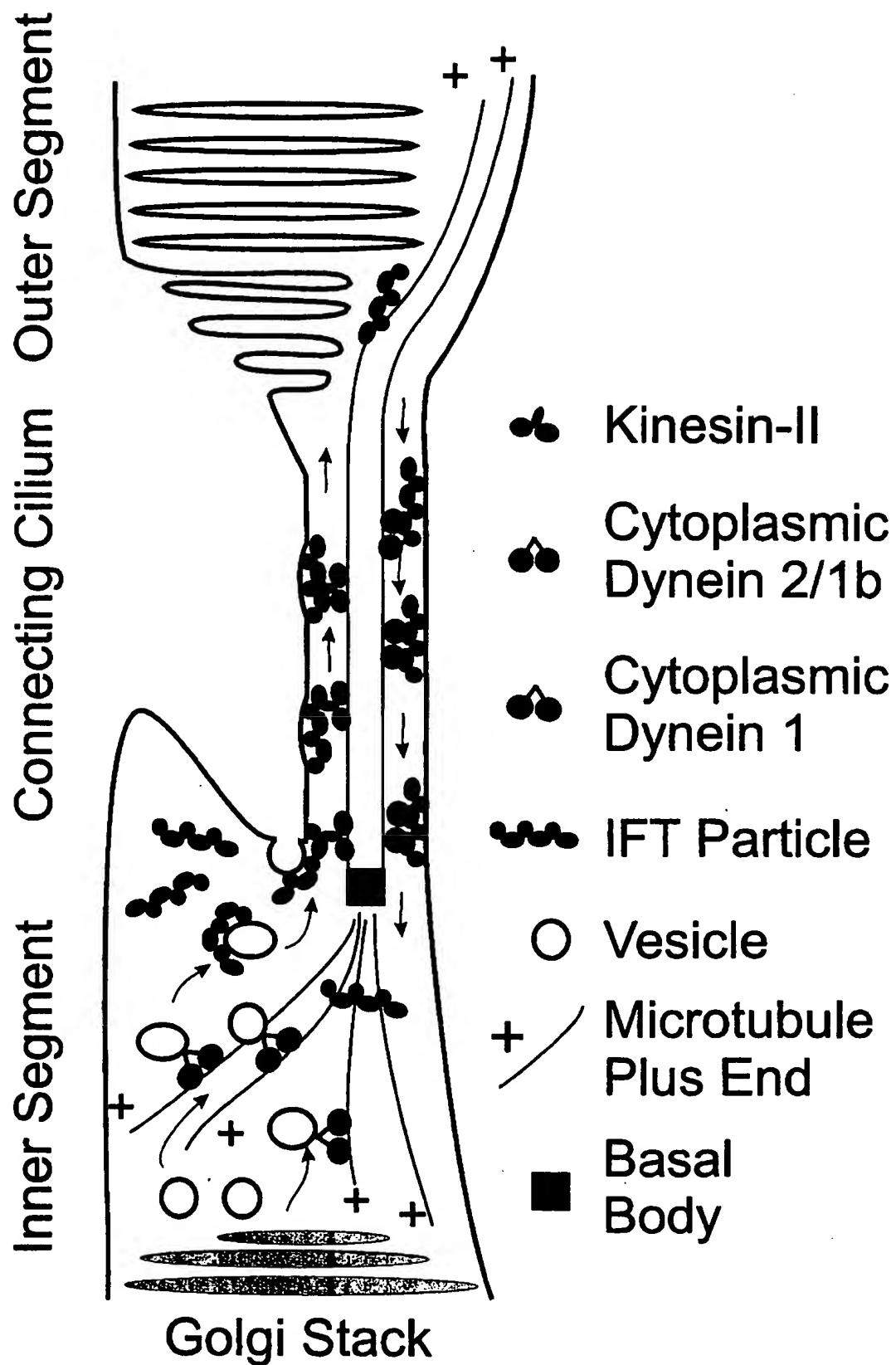


FIG. 5

IFT20

Chlamydomonas

>Cr_IFT20 predicted peptide

MDAVDRGVYFDEFHVRILDVDKYNASKSLQDNTNVFINNIQNMQLVDKYVSAIDQQVERLEA
EKLKAIGLNRNVAALSEERKRKQKEQERMLAEKQEELERLQMEEQSLIKVKGEQELMIQKLSDSS
SGAAYV

(SEQ ID NO: 2)

FIG. 6A

>Cr_IFT20 cDNA

CACCGCTGCCGCTGAACAGAAAGTCTGCGCAGACTCGTCTTGCCTGCAAGTTCTGCCAAAAC
CAGCAGGCCCTAGAGGTTGCCTAACCTAAATACAAAACACAGAGCATGGACGCGGTA
GATAGAGGAGTCTACTTGACGAGGACTTCATGTCCGCATTCTGATGTTGACAAGTACAAT
GCTTCAAAGTCGCTCCAGGACAACACAAATGTGTCATTAACAACATCCAAAATATGCAAGGC
CTCGTGGACAAGTACGTGTCGCCATCGACCAGCAGGTCGAGCGGGCTAGAAGCTGAAAAGCT
GAAGGCCATTGCCCTGCCGAACCGGGTGGCTGCGCTGAGCGAGGAGCGGAAACGTAAACAA
AAGGAGCAGGAGCGCATGCTAGCGGAGAACGAGGAGGAGCTTGAGAGGCTCAAATGGAGG
AGCAGTCGCTGATCAAGGTGAAGGGCGAGCAGGAGCTCATGATTGAGAAGCTGTCGGACAGC
AGCAGCGGGGCGGCATACGTGTAACCGGTGTTGGCAGCTGCGTGCAGGATGTTGCT
CTGTGAGGGTTGGCTGAGCGGGAGGCTGCTATTGAGGCTGCAGCATGCGGCTGGTGGC
AGATGTACATAACGGTATGGGGTGGTGGCAGAACGAAACGGCGAGGGTGCAGGAAATGTC
GTGCAGAACGCGACGCTACAGCATCCATGGTAGAGGCTTACTGGGTGTCAGTGCCTCGTC
CGCCACTGGGACACACTTGCAGCGAGGAGCGCCATTGTTGGCCCACGGATTGCGTCAAGG
ACTTGAACGGCGCCAGTGAAGGCGGGAAATGGAATGAAACAAACGACTCGAAAAAAAAAA
AAAAAAA

(SEQ ID NO: 1)

FIG. 6B

Human

>Hs_IFT20-1 chr17 gb|AC002094.1|AC002094 [expressed]

MAKDILGEAGLHFDELNKLRLVLDPEVTQQTIELKEECKDFVDKIGQFQKIVGGLIELVDQ
LAKEAENEKMKAIKGARNLLKSIAKQREAQQQLQALIAEKKMQLERYRVEYEALCKVEAE
QNEFIDQFIFQK

(SEQ ID NO: 23)

FIG. 6C

> Hs_IFT20-2 EST gb|AA584846.1|AA584846

QDSLGEAGLCFDELSKVRDPPEVT*QTRDPKEDCMDFVGKISPFQKEIVGGLIEPVVDQLAKAAENEK
RKVVGAWNLLQFMAKHREAQQQLLAQTAEEKMWLKRWWIEYE

(SEQ ID NO: 24)

FIG. 6D

>Hs_IFT20-3 chr14 emb|AL121808.2|CNS01DSJ Human chromosome 14

MVKDILAEEGLFDELNKLWVLSEVTQQTTELKEECKNFADKTGQFQKTVGGLIELVDK
LAKKA*NAKMRAMVLR

(SEQ ID NO: 25)

FIG. 6E

IFT27

Chlamydomonas

>Cr_IFT27 predicted peptide

MVKKEVKPIDITATLRCKVAVVGEATVGKSALISMFTSKGSKFLKDYAMTSG
VEVVVAPVTIPDTTVSVELFLLDTAGSDLYKEQISQYWNGVYYAILVFDVSSMESFESCK
AWFELLKSARPDRERPLRAVLVANKTDLPPQRHQRVRLDMAQDWATTNTLDFFDVSANPPG
KDADAPFLSIATTFYRNYEDKVAAFQDACRNY

(SEQ ID NO: 4)

FIG. 7A

>Cr_IFT27 cDNA sequence

ATGGTGAAGAAAGAAGTGAAGCCCATCGATATCACCGCAACGCTAACGATGCAAAGTAGCAGT
AGTCGGCGAAGCGACTGTCGGCAAGAGCGCGCTCATCTATGTTACGAGTAAAGGCAGCA
AGTTTCTAAAGGACTATGCGATGACGAGTGGGGTGGAGGTGGTAGCCCCGGTGACCATT
CCGGACACGACGGTCTCGGTGGAGCTTTCTGCTGGACACGGCGGGGAGCGACCTGTACAA
GGAGCAGATATCGCAGTACTGGAACGGCGTATACTACGCCATTCTCGTGTTCGATGTGAGCTC
TATGGAGTCCTCGAGTCGTGCAAGGCGTGGTTGAGCTGCTCAAATCGCGCGTCCCGACCG
CGAGCGGCCGCTGCGCGCGTGGCGAACAAAGACGGACCTTCCGCCAGCGGCACC
AGGTGCGGCTGGACATGGCGCAGGACTGGGCCACCAACACCCCTGACTTCTCGACGTGT
CCGCGAACCCGCCGGCAAGGACCGGGATCGCCGTTCTGTCCATGCCACCACTTCTACC
GCAACTACGAGGACAAGGTGGCGGCCCTCCAGGACGCTTGCCGCAACTACTGA

(SEQ ID NO: 3)

FIG. 7B

Human

>Hs_IFT27 gi|12653581|gb|AAH00566.1|AAH00566 putative GTP-binding protein

MVKLAACILAGDPAVGKTALAQIFRSDFGAHFQKSYTLLGMDLVVKTVPVDTGDSVELFIFDS
AGKELFSEMLDKLWESPNVLCLVYDVTNEESFNNCSKWLEKARSQAPGISLPGVLVGNKTDLAG
RRAVDSAEARAWALGQGLECFETSVKEMENFEAPFHCLAKQFHQLYREKVEVFRALA

(SEQ ID NO: 26)

FIG. 7C

IFT46

Chlamydomonas

>Cr_IFT46 predicted peptide sequence

```
MDDSMRDYPDRGDDLDQFQGTARSQVVQNQPHDEEVNLSESESFAGADE  
PPAAPRDSLIESHDMDEGPAAPARTLSPTGYEAGKHAPGGIANSDEAPPAYNAQEYKH  
LNVGEDVRELFSYIGRYKPQTVELDTRIKPFIPDYIPAVGGIDEFIKVPRPDTKPDYLGL  
KVLDEPAAKQSDPTVLTQLRQLSKEAPGAKADMVRLEHTDENKAKKIQQWIASINDIH  
KAKPAATVNYSKRMPEIEALMQEWPPEVETFLKTMHMPSGDVELDIKYARLVCTLLDIP  
VYDDPVESLHVLFLEFKNNPIFRQHMEMENKLDGMSGGGGGMMGGADVLGL
```

(SEQ ID NO: 6)

FIG. 8A

>Cr_IFT46 cDNA sequence

```
ATGGATGACTCTATGGACTACCCTGACCGCGACGGGACGACCTGGACCAGTTCCAGGGCAC  
CGCGCGCTCGCAGGTCGTGCAGAACCAACAGCCGACGACGAGGAGGTAAACCTGAGTGAGTCGG  
AGAGCTTCGCGGGAGCGGATGAGCCTCCAGCTGCGCCTAGAGATGCGTCGCTCATAGAGTCA  
CACGACATGGACGAGGGGCCAGCTGCTCCAGCGCGAACACTCTCACCAACGGGCTATGAGGC  
TGGAAAGCACCGACCTGGCGCATGCCAACCTCGGACGAGGACCGCCGGGTGCTTACAACG  
CACAGGAGTACAAGCACCTGAACGTGGCGAGGACGTGCGCAGCTGTTCTACATCGGC  
CGCTACAAGCCGACAGCGTGGAGCTGGACACGCGCATCAAGCCCTCATCCCTGACTACATC  
CCC CGGGTGGCGGCATCGACGAGTTCATCAAGGTGCCCGACCCGACACCAAGCCGACTA  
CCTGGGGCTCAAGGTTCTGGACGAGCCGCCAACGAGTCGGACCCACGGTGCTGACGC  
TGCAGCTCGGCAGCTGTCACGGAGGCGCCGGCGCAAGGCCACATGGTGGGGCGGCTG  
GAGCACACCGACGAGAACAAAGGCCAAGAACAGATCCACGAGCTGGATGCCTCCATCAACGACAT  
CCACAAGGCCAACCGCCGCCACCGTCAACTACAGCAAGCGCATGCCAGAGATCGAGGCGC  
TGATGCAGGAGTGGCCGGAGGTGGAGAACCTTCCTCAAGACCATGCACATGCCGTCCGGC  
GATGTGGAGCTGGACATCAAGACCTACGCCGGCTGGTGTGCACGCTGCTGGACATTCCCGTG  
TACGACGACCCCGTGGAGAGCCTGCACGTGTTCACACTGTACCTGGAGTTCAAGAACAC  
CCC ATCTTCAGGCAGCACATGGAGATGGAGAACAAAGCTGGACGGCATGTCGGGGCGGCGG  
CGGCATGATGGCGGCGCGCGGATGTGCTGGCTTGTGA
```

(SEQ ID NO: 5)

FIG. 8B

Human

>Hs_IFT46 gi|8926685|emb|CAB96537.1| hypothetical protein [Homo sapiens]

```
MADNSSDECEEENNKEKKKTSQTPQRGFSENEDDDDDDDDSSETDSDDDEEHGAPLEGAY  
DPADYEHPVSAEIKELFQYISRYTPQLIDLDHKLKPFIPDFIPAVGDIDAFLKVPMPDGKPDNLGL  
VLDEPSTKQSDPTVLSLWL TENSQHNI TQHMVKVSLEDAEKNPKAIDTWIESISELHSRKPPATV  
HYTRPMPDIDTLMQEWSPEFEELLGVSLPTAEIDCSLAEYIDMICAILDIPVYKSRIQLHLLFLYS  
EFKNSQHFKA LAEGKKAFTPSSNSTSQAGDMETLTF S
```

(SEQ ID NO: 27)

FIG. 8C

IFT52

Chlamydomonas

>Cr_IFT52 predicted peptide sequence

MEEPGAEEVRLFSTAKGESHTHKAGFKQLFRRRLRSTYRPDKVDKDDFTLDTLRSAHILVLGGPKE
KFTAPEVDMKKFKVNGGSILILMSEGEEKAGTNINYFLEQFGMSVNNDAVVRTTHYKYLHPKE
VLISDGILNRAVITGAGKSLNSNDDDEFRVSRGQPQAFDGTGLEYVFPGATLSVQKPAVPVLSSGKI
AYPMNRPVGAVWAQPGYRIAVLGSCAMFDDKWLDKEENSKIMDFFKFLEPHSKIQLNDIDAE
PDVSDLKLKPDTASLADKLKGCLQEIDDVPRDWTSLFDDSLFKFDTGLIPEAVSLYEKLGVKKGQL
NLIPPSFETPLPPLQPAVFPPPTIREPPPAALELFDLDESFASETNRLASLTNKCHGEEDLEYYIMEAGH
ILGLKLQENANAKHVLSEVFRRIAQYKMGSLGLGQTLDMSGQTLPAANQFGDQFEL

(SEQ ID NO: 8)

FIG. 9A

10
20
30
40
50
60
70
80
90
100

>*Chlamydomonas* cDNA sequence

CTAATGGCATGCAGTAAGCACTGGTATAGAAACCGTTCCCACCGCCGCCAGCCCCGCGT
CCTGTGAGCTGAGAGCTACTTAACAGCCATGGAGGAGCCGGCGGGAGGAGGTTCGGATT
TCTTCAGCACAGCGAAGGGGAATCCCATAACGACAAGGCAGGCTCAAGCAGCTATTCGA
CGATTGCCTCAACTTATCGTCCAGACAAAGTAGATAAGGATGACTTCACGCTGGACACGCTG
CGGTCAAGCGCACATCCTTGCTCGGTGGCCGAAGGAGAAGTTCACCGCGCTGAGGTGGA
CATGCTAAAAAGTTCTGAAGAACATGGTGGCTCCATCCTCATTCTAATGTCGGAGGGCGGCGA
GGAGAAGGCGGGCACTAACATCAACTACTTCCTCGAGCAGTTGGCATGTCGGTAACAAACG
ACGCCGTGGTCCGCACCACGCACTACAAGTACCTGCACCCCAAGGAGGTGCTCATCGGACG
GCATCCTCAACCGGGCGGTGATCACGGCGGGGAAGTCGCTGAACAGCAACGACGACGAC
GAGTTCCCGTGTGCGGGGCCGAGGCTTTGATGGCACGGGCTGGAGTACGCTTCCCC
TTCGGTGCACGCTCTCAGTGCAGAACGCCCCGGTGGCCGTCTGTCCAGCGGAAAATCGCG
TACCCCATGAACCGGCCAGTGGTGCAGTGGCCAGCCCCGCTACGGCCGATCGCCGT
GCTGGGCTCGTGCACGCTGAGGACACTAACAGTGGCTGGACAAGGAGGAGAACTCCAAAATCA
TGGACTTCTCTCAAGTTCCTCGAGCCGATTCCAAACTCAACGACATTGACGCCGG
AGGAGCCGGACGTGAGCAGCTGAAGGACTGCTGCCGACACAGCCAGTCTGGCAGACAGCTG
AAGGGCTGCCTCAGGAGATCGACGACGTGCCGCGACTGGACCTCGCTGTTGACGACTC
GCTGTTCAAGTTCGACACCGGCCTATCCCTGAGGCCGTGCGCTGTACGAGAACGCTGGCGT
GAAGAAGGGGCACTGAACCTCATCCGCCCTCCTCGAGACGCCACTGCCGCCGTGAGCC
CGCCGTGTTCCCGCCACCATCCGTGAGCCGCCGCCGGCGCTGGAGCTGTTGACCTGGA
TGAGAGCTTGCAGCGAGACGAACCGCTGGCCTCGCTACCAACAAGTGCCACGGCGAGG
AGGACCTGGAGTACTACATCATGGAGGCCACATCCTGGCCTCAAGCTGCAGGAGAAC
GCCAACGCCAACGACGTGCTGCGAGGTGTTCCGCCATCGCGAGTACAAGATGGCAG
CCTGGCCTGGCCAGACGCTGGACTCCATGGCCAGACCCCTGCCGCCAACAGCTCG
GCGACCAAGTTGAGCTGTAAGGAGCAGCGAGCTACAGGCCAGCAACTGCGTGGCAGGCC
AGGGCGGGCGCTGGCTGCCGGAGGCCAGGGCGGGGCGCTGGCCTGGGAATGCTGCTGG
CAGCGGATGTGAAACGTGGGGCGCCGAGCTGCTGGAGCTGAGGCGGTTGGGCTGGCTG
CTGGCGTGTGGCAGCAGGATGTGCGCTTGTGCTGATGCGGTACGGAGCAGCGGCATGC
TGGGCTGCTGAACAGAGCCACGCCGGAGGGTGTGCCGCCAACGGCAGCAGCATGCTGC
ACGCCGGTTGTGGCTGCCGGCGAAAGCTGGCATTACCGGTGCCCTCTGAAAGGCC
GCTGGCCTGGCACCGCGTGTGCCCTTGGGTGTACTGGTTCACCGTTCTCC
AGTCTGATGAGAGGAGCCTTATCGGATTGACAATGGCATGGTAACGATGGATTATGGAT
ATCGGAGTGCACAGAGGCTGACAAGATAACGTTACAGTCCAGGAGATATGTTGCTG
CAGCAACTACAAGATGGCGTCAGTCAGACCCGACCTGTTGAGTGCTGCAGGCTGACACGCA
TGCTGACAGAACAGACGCCGCTGCAATTGCGGTTGATATTTAGCCAGAAGCAATATGTGG
TGTATGCCGGGGGGTGGCATGAGGCCGGCGAGTGGAGGAGTACAGGGCTGCGTGGCG
CGTCTGCCGGTTGCAACAGTGAGCTGTGTTGGGTGTGCAAGGTGGTGGCGTGTGCATGGAGCC
GTGTGGAGCAGTGTCCCGTGGCGCTCAAGCGGCCAGCATTCACTAACGCTCACGTAAAAC
TCATTGCGGCTGAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

(SEQ ID NO: 7)

FIG. 9B

Human

>Hs_IFT52_gi|4929575|gb|AAD34048.1|AF151811_1 CGI-53 protein [Homo sapiens]
MEKELRSTILFNAVKKEIFTTNNGYKSMQKKLRSNWKIQSLKDEITSEKLNQVKLWITAGPREKFT
AAEFEILKKYLDTGGDVLVMLGEGGESRFDTNINFLLLEEYGIMVNNDAVVRNVYHKYFHPKEAL
VSSGVLNREISRAAGKAVLAIIDEESSGNNAQALTTFVYPFGATLSVMKPAAVLSTGSVCFPLNRPI
LAFYHSKNQGGKLAVLGSCHMFSDQYLDKEENSKIMDVVFQWLTTGDIHLNQIDAEDPEISDY
MMLPYTATLSKRNRCLQESDEIPRDFTLFDLSIFQLDDTSFHSVIEAHEQLNVKHEPLQLIQPQFE
TPLPLQPAVFPPSFRELPPPLELFDLDETFSSSEKARLAQITNKCTEEDLEFYVRKGCGDILGVTSKLP
KDQQDAKHILEHVFFQVVEFKKLNQEHDIDTSETAFQNNF (SEQ ID NO: 28)

FIG. 9C

Caenorhabditis elegans

>Ce_Osm-6_gi|2292823|emb|CAA03975.1| osm-6 [Caenorhabditis elegans]
MPPFSDEKMTNRSGRKVLIDQSKQQQISLISGFRGVARHLKSVLTVEINTEPINLNGLEDVRMLIIP
QPKTSFGTGEIEAIWKFVEEGGSLMILSGEggerQSLNEMIAKYGITVNKDSVRTVFLKFDPKEA
LVANGVINRAIAVAAKKNVSTEQKHNSQALSFIYPYGCTLDVNNRMSNVVLSGGSTSPTSRPVAA
FHETKLNEKKGRVCVVGVSVMFHDTYIDKEENGKIFDTFVEFLVNGLELNTIDAEEPEINDYTN
IPDHMHMSQQIKVCMYEGELDQAISDFMKIMDTSLHSFNLKHWPMТИRLYEALNLSPPPLTLVEPQ
FELPMPPFQPAVFPPPTFQELPMPPLELFDLDEQFSSPEIQLSQLANRSEEEDLIFFIEKAGEITGISAEL
TRSERTPKKIIELAVSKLMLFKRSMMGELEVASAFA DIGEHDAHHQSFnQGEEMDEQLFSDIDEFD
DL (SEQ ID NO: 29)

FIG. 9D

IFT57

Chlamydomonas

>Cr_IFT57 predicted peptide sequence

MSSKRGGRSSLAKAPEAVNGEAFAPEASPPPGDDGDAGGEDGGAPAPPPPATKGGPVAVGRS
LEIQTTPDVCMEMLADKLKLLNYEADFCRKKPYRKPLSRLYFAVPLANSSEQFFYFTSLATWLL
GLAGVELPAPKEFDDPNLTQCNILGAVKLGAPPFYHPTKLTVGNGKEVVGVLDFVLERR
HHKYSRPAYGNDGQPEEGVQLDDEAEAAAMEGADELAMPAQNQADDDEEEGVYVDPGRGDA
AGPGTGASAAMDAEKAVLVSKVDP TLWKEIERVAPKLRTIAADSKDWRSHLDEAHQHKEISK
AWPDSKTSLERLRAIDLNGTLEKLQTREKFLNEQFESLMQQYRAARTTFTDVQETYNRKTEAVAD
RNQEMHRIGETLEEVKAMMDEKGSNIADATPVARIKTAIKQLNKE LHDMEVRIGVVSHLLQLSL
RNKRLLQAQAALSDEED (SEQ ID NO: 10)

FIG. 10A

>Cr_IFT57 cDNA sequence

GTCTGGAAACCCAGCGAGCCGCGCTCCTGCCACATGTCCTGCTAGCTTCTGGTTACACCGT
AGATTCA TTAAAGCGAGAGACATGAGCAGCAAGCGGGTGGCGGTATCCTTAGCAAAGGC
GCCCGAAGAGGGCGTAAATGGCGAGGCATTGCGCCTGAGGCATCTCCCCCTCCACCCGGCG
ACGATGGAGATGCTGGTGGGAGGACGGTGGCGCGCCTGCGCCCCCTCCGCCCCGGCTACA
AAGGGCGGTCCAGTAGCTGTAGGAAGGTGCTGGAGATA CAAACAACGCCGGACGTGTGCAT
GGAAATGCTGGCCGACAAGCTGAAGCTGCTAAACTACGAGGCGGATTCTGCAGGAAGAAGA
AGCCCTACCGAAACCCCTCTCGCGCTCTATTGCGGTGCCGCTCGCAAACACTCGAGCGAGC
AGTTCTCTACTTTACCAGTCTGGCGACCTGGCTGCTGGGCTGGCTGGCTGGAGCTGCCCG
CTCCAAGGAGTTGATGACCCGAAC TGACGTGCCAGAACATCCTGGGTGCGGTGAAGAAG
CTGGGCTTGCGCCGCCAGCTACCAACCCCTACCAAGCTCACAGTGGCAACGGCAAGGAGGT
GGTGGGTGTGCTGGACGGCTGGTGGACTTCGTGCTGGAGCGGGCACCACAAGTACAGCC
GGCCCGCGTACGGAAATGATGGCAACCGGAGGAGGGCGTGCACACTGGACGATGAGGCGGA
GGCTGCCCGATGGAGGGTGC GGATGAGCTGGCGATGCCAGCCCAGAACACCAGGCGGATGACG
ATGAGGAGGAGGAGGGCGTATACGTGGACCCGGCGCGT GACGCCCGGGCCCAGGGAC
AGGGGATCCGCGGCATGGACGCCAGAGAAGGCCGGTCTGTGCTCAAGGTGGACCCACGC
TCTGGAAGATCGAGCTGGAGCGCGTGGCGCCGAAGCTGCGTATCACCATGCCGCCACTCG
AAGGACTGGCGCTCACATCTGGATGAGGCGCACCAGCACAAGGAGGTATCAGCAAGGCCTG
GCCGACAGCAAGACGTCGCTGGAGCGCCTCGCGTGGACCTGAACGGCACGCTGGAGAAC
TGCAGACGCGTGAGAAGTTCTCAACGAGCAGTTGAGAGCCTCATGCAGCAGTACCGCGCC
GCCCGCACCACGTTCACGGACGTGCAGGAGACATACAACCGCAAGACGCCAGGCGGTGGCGGA
CCGGAACCGAGGAGATGCACCGCATCGCGAGACGCTGGAGGAGGTGAAGGCCATGATGGAC
GAGAAGGGCAGCAACATCGCGACGCCACGCCCTGCGCATCAAGACGCCATCAAGCA
GCTTAACAAGGAGCTGCACGACATGGAGGTGCGCATCGCGTGGTAGCCACACGCTGCTGC
AGCTATCGCTGCGCAACAAGCGATTGCTGCAGGCGCAGGCGCTCTCAGT GACGAGGAGGAG
GACTAGCTAGATCAGCGAGTGACAGAGGGCATGTGCGTACCGTGTGCGCGGTACAGCCG
TGGGATGGAAGAGGTGATGTGGCGGGTTGCGGACCCAGCATTGGTAGACCAGATCACTTAT
AGGTACAGAAAGACGGCTATATTGTTGGGGCGCGCACCCCTGGCTATGTATATAAGCCG
TAGCGCAGAGCGCTGCAAATGCCGTGCTGTGCCTGTGCTCCCGTGGGTGCGCGTCCCG
TCAAGTTCATATAAGCTGTTGTGACTGTGAGGCAGGCATGGCATATGGACAGGGCATCCCTG
CAAGGAAAGCAGGCAGCGGTATCCTGTGGCAGGGTCAAGCAGTGATGGAGGGCGAAGC
GAGTTGCGGGCCTGTAAGCACAGGGTTGCCAAAAAAA (SEQ ID NO: 9)

FIG. 10B

Mouse

>Mm_IFT57 predicted peptide sequence

MAAAAIVPPSGLDDGVSRAGEGAGEAVVERGPAAAHMFVVMEDLVEKLKLLRYEEELLRK
SNLKPPSRHYFALPTNPGEQFYMFCTLAALINKGRAFEQPQEYDDPNATISNILSELRSFGRTAD
FPPSKLKGSGYGEQVCYVLDCLAEEALKYIGFTWKRPSYPVEELEETVPEDDAELTLSKVDEEFVE
EETDNEENFIDLNVLKAQTYRLDTNESAKQEDILESTTDAAEWSLEVERVLPQLKVTIRTDNKDW
RIHVDQMHQHKSGIESALKETKGFLDKLHNEISRTLEKIGSREKYINNQLEHLVQEYRGAQALSE
ARERYQQGNGGTERTRLLSEVTEELEVKVQEMEEKGSSMTDGTPLVKIKQSLTKLKQETVQMDI
(SEQ ID NO: 12)

FIG. 10C

>MmIFT57 cDNA sequence

GCGAAGGGCTGCAGAGATCCTGGCCGGAGCCAGGCCGGCGCTGGGG
TCTGAGCAGGGATGGCCGCCGCGGCCGGTGTACCCGCCGTCGGCTGGACATGGGGTG
TCTCGGGCTCGCGGGGAAGGCGCAGGGGAGGCTGTGGTGGAGCGCGGGCAGGAGCGGCC
CCACATGTTCTGGTGTAGGAAGACTTAGTGAGAAGCTGAAGCTGCTCCGCTACGAGGAGG
AGCTACTCCGAAAGAGCAATCTGAAGCCCCGTCCAGACACTACTTGTCTGCCTACCAACC
CAGGCGAGCAGTTCTACATGTTGCACTTTGCTGCGTGGCTGATCAACAAA
ACTGGCCGTG
CCTTGAGCAGCCTCAAGAACATACGACGATCCAATGCAACTATATCTAATATACTCTGAGC
TTCGCTCTTGGAGAACTGCAGATTTCCTCCTCAAATTAAAGTCTGGTTACGGAGAAC
AGTGTGCTATGTTCTGATTGCTTAGCTGAAGAAGCTTAAAATATATTGGTTCACTGGAAA
AGGCCATCATACCCAGTGGAAAGAACTAGAAGAACGACTGTTCCAGAAGATGATGCCGAGTT
AACATTAAGTAAAGTGGATGAAGAATTGTGGAAAGAGGAGACAGATAATGAAGAAA
ACTTAA
TTGATCTCACGTTAAAGGCCAGACCTATCGCTGGACACAAACGAGTCTGCCAAACAAG
AAGATATTGGAATCTACGACAGATGCTGCCAATGGAGCCTAGAAGTTGAGCGTGTACTAC
CGCAGCTGAAAGTCACGATTAGGACTGACAATAAGGATTGGAGGATCCATGTTGACCAATG
CACCAGCACAAAAGTGGATTGAATCTGCTCTGAAGGAGACAGATAACGAGTCTGCCAAACAAG
CCATAATGAAATTAGCAGGACTCTGGAAAAGATTGGCAGCCGAGAAAAGTACATTAACAATC
AACTTGAGCACTTGGTCAAGAACATCTGCTGGGCCAAGCCCAGCTAAGTGAGGCAAGGGAG
CGCTACCAGCAGGGCAATGGCGGAGTAACTGAACGGACCAGACTCCTCTGAGGTTACAGA
AGAATTAGAAAAGTAAAGCAAGAAATGGAAGAGAAGGGCAGCAGCATGACGGACGGCACT
CCTTGCTGAAGATTAAGCAGAGCTAACCAAGCTGAAGCAAGAAACTGTTCAGATGGACAT
TAGAATCGGTGTGGTGGAGCACACGCTACTTCAGTCAGTCAAAACTCAAGGAGAAGTGC
AACATGACCAATTGGCTTCTATTAAACACGTGGC
CCAGGGACATGCATGCAGCTGTCACCCAGAGTCAGCAATTGGCTTCTATTAAACACGTGGC
TTCCATGCTCTGATTATTGTTTATATCAAATGATTGTTAATGTTGATTGATTCCAAA
CACAATTATACTCTTCAAGCATATTCAAGTGGTATTGTCACATGTGTTAATATCATGGT
ATTATGATGGCCAAAGCCTGTACAATGAATATAGTATTAAATAAGTACTAAA
AAAAAAA
(SEQ ID NO: 11)

FIG. 10D

Human

>HsIFT57-1 gi|7022022|dbj|BAA91466.1| unnamed protein product [Homo sapiens]
MTAALAVVTTSGLEDGVPVRSRGEGTGEVVLERGPGAAYHMFVVMEDLVEKLKLLRYEEFLRKS
NLKAPSRRHYFALPTNPGEQFYMFCTLAALWLINKAGRPFEPQEQYDDPNATISNILSELRSFGRTADF
PPSKLKSGYGEHVCYVLDCFAEEALKYIGFTWKRPPIYPVEELEESVAEDDAELTLNKVDEEFVEE
ETDNEENFIDLNVLKQAQTYHLDMNETAKQEDILESTTDAAEWSLEVERVLPQLKVTIRTDNKDWR
IHVDQMHQHRSGIESALKETKGFLDKLHNEITRTLEKISSREKYINNQLENLVQEYRAAQQLSEA
KERYQQNGGVTERTRLLSEVMEELEKVKQEMEEKGSSMTDGAPLVKIKQSLTKLKQETVEMDI
RIGIVEHTLLQSKLKEKSNNTRNMHATVIPEPATGFY (SEQ ID NO: 30)

FIG. 10E

>HsIFT57-2 chromosome 12 [ESTS BF089172]
DQRIHVDQMYQHKSGISSLKESKRFFDKLHNE
ISKTLEKISHCEKYINHQLEHRVQEYPAQTQLSDVRSQQGSGGVIERTRLLSEATED
TEHVKLEMEEKCSSMTDGDSDLVLIKQSLTKLKQETVQMDIRIGVVEHTLL (SEQ ID NO: 31)

FIG. 10F

Caenorhabditis elegans

>CeIFT57 gi|7504754|pir|T22994 hypothetical protein F59C6.9 - Caenorhabditis elegans
MLHHIKSLKSVLSRGQEGRFGEKRHSNTTFITGIATDFTAALKSGAGENVIFILNSLADASLVHVG
FQWQKMIPPKEEDEDTAVDEQDEDDDNDIVEEPMLFLDDDDDNVIEIDLKAQGLATESKNPLQ
SVLQSNTDAITWKQEVERVAPQLKITLKQDAKDWRLHLEQMNSMHKNVEQKVGNVGPYLDNMS
KDIAKALERIASREKSLNSQLASMMMSKFRRATDTRAELREKYKAASVGVSSRTETLDRISDDIEQL
KKQIEEQGAKSSDGAPLVKIKQAVSKLEEELQTMNVQIGVFEQSILNTYLRDHFNFSANLLNIM

(SEQ ID NO: 32)

FIG. 10G

IFT72

Chlamydomonas

>Cr_IFT72 partial predicted peptide sequence (lacking N-terminal end)
VYVIQQEFAALKDRNEQQRKRVDEVLTERLNLESKAKQAESK
MSEIQASMDQRLLNSMPPSQRNEYTTLVAEQQQQLQADSKRFEELDVKALQASEGELAR
NPFKQRSLQLQEQIRALTGKKYELTEERQSRSPEELRADLMAKIKRDNTVEQMTQQI
RELQDQIKKMEERVKSLGGATSGAVAAEEKANREKFEELLAKERHNNFMDGFSRKAAK
MQEKQQKEDGIVGVLEKVMQGIIGSNLPSQKKYKEMQDELEYKKMQLENTQTQERLK
EELTMRRTELEKIDTLEDKIKLELTQLAERQEAMEKEMGEFGSVEDIQRKANAARERMGA
CAVCCLKRKDLLRSIVAERGLKFQAKRAQLQDHNLQVQLEKMEAQLKNLSAGVFEMDEFI
KAKESETNYRQLASNIAALVDDLNHVVKAAV
(SEQ ID NO: 14)

FIG. 11 A

>Cr_IFT72 partial Cdna sequence (lacking 5' end)
GTGTACGTGATCCAGCAGGAGTTCGCGGCCCTCAAGGACCGAACGAGCACAGCGCAAGCG
CGTGGACGAGGTGCTCACCGAGCGCCTAACCTCGAGTCCAAGGCCAACGAGGCCAGTCCA
AGATGTCTGAGATCCAGGCCTCATGGACCAGCGCCTCAACTCTATGCCGCCAGCCAGCGA
ACGAATACACCAACCGCTCGTGGCCAGCAGCAGCAGCTGCAGGCCAGCAGCAAGCGCTTGAG
GAGGTGCTGGACGAGCTGGACAAGGCCTGCAGCTGCAGGAGCAGATCCGCCTCACGGGGAAAGAAGTAC
CCTTCAGCAGCGCAGCCTGCAGCTGCAGGCCAGCAGATCCGCCTCACGGGGAAAGAAGTAC
GAGCTGACGGAGGAGGAGCGGCAGAGCAAGCGCTCGCCCAGGGAGCTCGCGCCACCTCAT
GGCCAAGATCAAGCGAGACAAACACCGAGGTGGAGCAGATGACGCAGCAGATCCGCAGCTTC
AGGACCAAGATCAAGAAGATGGAGGAGCGCGTCAAGAGCCTGGCGGCCACCAGCGCGC
GGTGGCGCGGAGGAAAGGCCAACCGCGAGAAGTGTGAGGAGCTGTTGCCAAGGAGCGC
CACCTAAACAACCTTATGGACGGCTTCCCCAGCCCAAGGCCCAAGATGCAGGAGAAGCA
GCAGAAGGAGGACGGCATCGTGGCGTGTGGAGAAGATGGTAAGATGCAGGGCATATTG
GCTCCAACCTGCCAGCCAGAACAGAACAGCAGGCCAGGAGCGCTCAAGGAGGAGCTGACCATGCG
GATGCAGCTGGAGAACACCGCAGACCACGCAGGCCAGGAGCGCTCAAGGAGGAGCTGACCATGCG
CGCACAGAGCTGGAGAACATCGATACGCTGGAGGACAAGATCAAGCTGGAGCTGACGCAGCT
GGCGGAGCGGCAGGAGGCCATGGAGAAGGAGATGGCGAGTTCGGCAGCGTCAAGGAGGACATC
CAGCGCAAGGCCAACGCCGACCGAGCGCATGGGGCCTGCGCAGTGTGCTGTTGAAGCG
CAAGGACCTGCTCGCTCCATCGTGGCGAGCGCGGCCCTCAAGTCCAGGCCAACCGCGC
AGCTGCAGGACCAACCTCCAGGTGCAGCTGGAGAAGATGGAGGCCAGCTGAAGAATCTG
AGCGCGGGCGTATCGAGATGGACGAGTTCATCAAGGCCAACGGAGAGCGAGACCAACTACCG
CCAGCTGGCCTCCAACATAGCGGCCCTGGTAGACGACCTCAACGTGCATGTCAAGAAGGCC
TGGTGTAAAGAAGGAGGAGTGGTGTAAAGGGCTCCGGAGGAGGGCGCTGCCGTTGTTGGG
GTGTTGGGGCGCGCGAGAAGTACGTGCGTGTGGCGTTGCCCCCTCAGCAGGCTGCACG
TGTAGTACGGTAGTCAAGGTGAAGGGCGCCTGGCACAGGAGGATGCTGACGCCGTGACGG
GTGACGATGACAGGCCATCGCAGGTTGATCTCTGCTGAGTCATTGACTTGGTTCTAG
ACAGGTGGGCTACAAGGCCGAGGTTGATGGCTACCTCGCAGTGCAGGCCAGCAGGTG
GGCGCATGCGCATGTGCCCTCAGGAGCGCGTGCAGGCCAGGGAAAGATGCGATGGAGTAGGC
TAGGCCCTGTGAGGGCCCTTGCGGAAGGCCACGCCATTCCATGCCCTGGCCCGAAGGCA
GCGCTGTTGGATACTGACCGAGCGCGTCAAGGCCAGGAGCTGAGTCAGAAGTGGAGCTA
CCGCCCCCTGCACAAGGGGTGATGTACATACTGTTATTAGGAGTCCGCTGCTTATAGCTACTG
GACTGCAGAAGAAGGAGGCTGCAAGGATCTGATGGAGGCGCTGGTGTATGGATGACGCTG
TAAGAGATGCACAAGAGAAAAAAAAAAAAAAA
(SEQ ID NO: 13)

FIG. 11B

Human

>HsIFT72 gi|13376669|ref|NP_079379.1| hypothetical protein FLJ22621
MEEVMNGYNMLKAQNDRETQLSDVIFTERQAKEKQIRSVEEEIEQEKGATDDIKNMSLENQVKY
LEMKTTEKLLQELDTLQQQLDSQNMKESLEAEIAHSQVKQEAVLHEKLYELESHRDQMIAD
KSIGSPMEEREKLLKQIKDDNQEIASMERQLTDTKEKINQFIEEIRQLMDLEEHQGEMNQKYKEL
KKREEHMDTFIETFEETKNQELKRKAQIEANIVALLEHCSRNIINRIEQISSITNQELKMMQDDLNFK
STEVQKSQSTAQNLTSDIQLQLQKMLESKMTEEQHSLKSKIKQMTTDLEIYNDLPALKSSG
EEKIKKLHQERMILSTHRNAFKKIMEKQNIEYEALKTQLQENETHSQLTNLERKWQHLEQNNFAM
KEFIATKSQESDYQPIKKNVTQIAEYNKTIVDALHSTSGN (SEQ ID NO: 33)

FIG. 11C

IFT88

Chlamydomonas

>Cr_IFT88 predicted peptide

MSYGGTEEDDLYGGYDEQSNPLAGSGGAALKALGADGAPPGTAMMGPPGTAMKSFVPGTA
MRGGTAMQQDPSLARPMTSNRGAGFTSAPNKKFDPLNRSMGSTLGSSGGAMLVARKGDT
SPEEQARGMEKTVHELLEKSAADAAKNDINSALENAMEAKKNERKLCRFREQNNMADQIN
LELMYAVDFNLAHMYHMNKNYSEALNLYTAIVRNKNFPQSGWLRVMGNIHFEQKKYPSA
IKMYRMLDQISATAKEVRFKIMRNIGLSFVRMGQYPDALQSFTA VMDNVPDHQTGYNLV
MCNYALSDREGMKNAFIKLKVSPSSEMDDDDDDPMGDDDMQVMTMDDGLKDEMCRKRNT
IITRLIVKAAQLISEKVDRANGFEGGMWCCEQLR DAGYT KLANEVELAKATRFMGQKQF
DKAVGVFKDFEKKEPRVKARAATNL AFLYFLEGETDQADKYSEMA LKS DRYNARAYVNKG
CVLVERGDLEGARSLFNEAAGIDPYCVEAIYNGLVSQRNLNPYALAAFKLHNMPDN
VEVIHQIATTYDMMGDFKNAV KWELLTSV SNDPGVLARLGAIHARFDDEAKALHYYQE
SHRVYPVNMDVISWL GAYHV KSEV YEKAMPFFDLASKIQPQEVKWALMVASCYRRTNNLP
AALGKYKQIHTQHPDNVECLRYLVHLCSELGRRAEAAEYMTKLKKA EKA AVPEATTAAAP
AAAAAGSGMGGMGGLDD DIGSSA VSAQNRGKMLVKEHMGGGGKDNDWGNEQLGDDLL
PM

(SEQ ID NO: 16)

FIG. 12A

10
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>Cr_IFT88 gi|11528334|gb|AF298884.1|AF298884 Chlamydomonas reinhardtii protein IFT88 (IFT88)
CGGCAACTTGACACTTGAGCTACTCGAAGGCAGGGCCGTGTGCAGAGCTCCTCCCCACTATC
CTTCCTTGCCTACCATACTTATCTGCTAACAGCCTATAGAAGATGAGCTACGGGGCACGG
AGGAGGATGACCTTATGGAGGATATGATGAGCAATCGAACCCGCTTGCAGGCTCGGGTGGT
GCCGCATTAAGGCACTTGGGGCCGATGGAGCTCCTCAGGCACCGCCATGATGGGCCGCT
GGCACGGCCATGAAGAGCTCGTGCAGGCACGGCTATGCAGGGCGGCACGGCATGCAGCA
GGACCCCAGCCTGGCGCCGCTATGACCTCGAACCGGGGTGCTGGCTTCACGTCGGCGCTAA
CAAGAAGTTGACCCCTCAATCGCTCAATGGGTGACACTGGGCTCGTCGGGGGTGGCGC
AATGCTGGTGGCTCGCAAGGGTACACCAGCCGGAGGAGCAGGCGCGGGATGGAGAAG
ACGGTGCATGAGCTGTTGAGAAGAGCGCGGGACGGCTAACGAAAGCTGTGCCCTCCGGAAACAG
AACAAACATGGCGGACCAGATCAACCTGGAGCTGATGTACGCCGTGACTAACCTGGCACA
CATGTACACATGAACAAGAACTACAGCGAGGCGCTAACCTGTACACAGCATCGTGC
ACAAGAACCTCCCGCAGTCGGGTTGGCTGCGCTAACATGGCAACATCCACCTCGAGCAG
AAGAAGTACCCCTCCGCCATCAAGATGTACCGCATGGCGTGGACCAGATCAGGCCACCGC
CAAGGAGGTCCGCTTCAAGATCATCGCAACATCGGCTGTCGTGCGCATGGCCAGTA
CCCCGACCGCCTGCAGTCCTCGCACGGTATGGACAACGTGCCGACCCAGACCGGCTA
CAACCTGGTCAATGTCAACTACGCGCTGAGCGACCGCGAGGGCATGAAGAACGCCCTCATCA
AGCTGCTCAAGGTGAGCCATCCAGCGAGATGGATGACGATGACGACGACGACCCATGGC
GATGACGACATGCAAGTGTACGACCATGGATGACGGGCTGAAGGACGAGATGCGCAAGCGCA
ACACCATCATCACGCCCTATTGTCAGGCCGCGCAGCTCATCTCGAGAACGGTGGATCGCG
CCAACGGCTTGAGGGCGCTTCATGTGGTCTGCGAGCAGCTCGCAGCGGGCTACACC
AAGCTGGCCAACGAGGTGGAGCTGGCAAGGCAGCCGGTTCATGGGAAAAGCAGTTGA
CAAAGCCGTGGCGTTCAAGGACTTGTAGAAGAAGGAGCCGCGCTAACGGCGCGCCG
CCACCAACCTGGCGTTCTGTACTTCCTGGAGGGCGAGACCGACCAAGGCCGACAAGTACAGC
GAGATGGCGCTCAAGAGCGACCGCTAACACGACGAGCCTACGTCAACAAGGGATGCGTGT
GGTGGAGCGCGGCGATCTGGAGGGAGCGCGAACGCTGTTAACGAGGCTGCCGGATCGACC
CCTACTGCGTGGAGGCCATCTACAACCTGGGCTGGTAGGCCAGCGCTGAACGAGCTGCCGT
ACCGCCTGGCGCGTTCAAGAACGCTGCACAAACATGGTCCCAGAACGCTGGAGGTATCCAC
CAGATGCCACCAACGTACGACATGATGGCGACTTCAAGAACGCGCTAACGGTTGAGCT
GCTCACCTCGCTGGTCAGAACGACCCCCGGCGTCTGGCGCAGCTGGAGGCCATCCACGCCA
GGTTCGACGACGAGGCCAAGGCAGCTGCAACTACTACCAAGGAGTCGACCCGCGTGTACCCGGT
AACATGGACGTCATCTCCTGGCTGGCGCTACCATGTCAAATGGAGGTGTACGAGAACGC
CATGCCCTCTTGACCTGGCTCCAAGATCCAGCCGAGGAGGTCAAGTGGCGCTCATGGT
GGCGTCTGCTACCGCCGACCAACAAACCTGCCCAGCGCTGGCAAGTACAAGCAAATCC
ACACGCAGCACCCGACAACGTTGAGTGCCTGCGTACCTGGTCACCTGTGCTCCGAGCTGG
GCCGCCGCGCCAGGCCCGAGTACATGACCAAGCTAAAAAGGCCGAGAACGCCGGCGGT
GCCCGAGGCCAACGACAGCGCGGCCGCCGCGCAGCTGGCAGTGGCATGGTGGCA
TGGCGGCCCTGGACGACATTGGCAGCAGCGCGGTGTGGCGCAGAACGCCGAGAACAG
ATGCTGGTCAAAGAGCACATGGTGGCGCGGTGGCAAGGACAACGACGACTGGGAAACG
AGCAGCTGGGACGACCTGCTGCCATGTAACCGCAGTGCTGCCACAGGGCTGGCGGG
GCGGGCGCTACGCCAGGCCAGTGGGCTACCGCCGCCCTGGCGAGGTGGCGCGCG
GCTGGCGAGCCATGCCGCCAGGCCAGGGCTGTGGGAGGTGATGGCGAGGGCGAGG
ACGACGACCCATAAAAGCCTGGGCTGGGCTGGGCTGGGAGGTGGCGGCCAGCGGGGG
GCGCTGTCTGCCAGGCCAGGGCGCTGAAGGCCAGTGTCAAGCCGCCCTCACCCGA
GTTGGGGCCGAGCCTGGCTGGAAAGGTGCTGAGCTTGGCTGGCTGGACGTCAGCG
ACTGCCCTGAGCTGGCTAAAGCATTACCGCTGATGCAAGCCGCCATTGGTGTGCGTAT
ATGTGTGTGAATGTATGTGTGCTAGGTAAGCACGAGATGCGTGTGCTGGTGTGCG
CTGCCACTTTGGCTGCAGGGCTCCAGGTCAAGTGTAAGGACATGAGCTGAGGCT
GGTGCATGGCAGTTGCCAGTCATGCCAGTGAAGTGAGCGAAGTGCAATAGGCTCTGCAGG
GCATGGATGCGTAGGAACAGGGCTGAATGATATCACTATGTGGCTGACGGGCCACAAC
TTACATGGGAGAGGGACGCCGAAAGGGTGTGAGGATCAGGAGCTTGGACTTGGCAGT
CTGTACATGGTGGCCAGTCAGTGCGGGCATAGACACATACAGGACCTGTGCTGCG
CCGCATCTGCCAGGAAGTCGTGCCGGTGTACGAGTGCAGGCCGAGTGCAGGATTGTGG
ACAGATGGGCCATCGGACATACTGGCACAGTGGCACCACCGCCCCCTGCGACGCCATGCTC
GCACGACCCCTGTAAGGTCAGGCCAAAAAA

(SEQ ID NO: 15)

FIG. 12B

Humans

>gi|5729800|ref|NP_006522.1| Tg737 protein; Probe hTg737 (polycystic kidney disease)
MMQNVHLAPETDEDDLYSGYNDYNPIYDIEELENDAAFFQQAVRTSHGRRPITAKISSTAVTRPIA
TGYSKTSASSIGRPMTGAIQDGVTTRMTAVRAAGFTKAALRGSAFDPLSQSRGPASPLEAKKK
DSPEEKIKQLEKEVNELESCIANSCGDLKLALEKADAGRKERVLVRQREQVTPENINLDLY
SVLSNLASQYSVNEMYAEALNTYQVIVKNKMFNSAGILKMNMGNIYLQQRNYSKAIFYRMAKD
QVPSVNKQMRIKIMQNIGVTFIQAGQYSDAINSYEHIMSMAPNLKAGYNLTICYFAIGDREKMKK
AFQKLITVPLEIDEDKYISPSDDPHTNLVTEAIKNDHLRQMERERKAMAEKYITTSAKLIAPVIETSF
AAGCDWCVEVVKASQYVELANDLEINKAVTYLRQKDYNQAVEILKVLEKKDNRVKSAAATNLS
ALYYMGKDFAQASSYADIAVNSDRYNPAALTNGNTVFANGDYEKAEEFYKEALRNDSSCTEAL
YNIGLTYEKLNRDEALCFLKLHAILRNSAEVLYQIANIYELMENPSQAIEWLMQVVSPIPTDPQ
VLSKLGEYDREGDKSQAFQYYYESYRFPCNIEVIEWLGAYYIDTQFWEKAIQYFERASLIQPTQ
VKWQLMVASCFRRSQNYQKALDTYKDTHRKFENVECLRFLVRLCTDLGLKDAQEYARKLKRL
EKMKEIREQRIKSGRDGSRGKREGSASGDSQNYASSKGERLSARLRALPGTNEPYESSSNK
EIDASYVDPLGPQIERPKTAKKRIDEDEFAEELGDLLPE (SEQ ID NO: 34)

FIG. 12C

Caenorhabditis elegans

>Ce_Osm-5 gi|12659061|gb|AAK01173.1|AF314195_1 OSM-5 [Caenorhabditis elegans]
MANSTFREDDDFYGGFDSYDKAYDIQNITQNPQQAVARSSHGRRPTASQMGFRDASSSYGKP
PGTMMGNQSRMGGRTAMANNNEPARPTAVRGAGYTSFANKVQAAERPLSTENSGENGEEKCR
QMENKVMEMLRESMLASEKKKFKEALDKAKEAGRERRAVVKHREQQGLVEMMNLDLTFTVLF
NLAQQYEANDMTNEALNTYEIIVRNKMFPNSGRLKVNIGNIHFRKREFTKALKYYRMALDQVPSI
QKDTRIKILNNIGTVRMGSYDDAISTFDHCVEENPNFITALNLILVAFCIQAEMRKEAFVKMIDI
PGFPDDDMKEKDDDVLLNQTLNSDMLKNWEKRNKSDEKAIAITAVKIISPVIAPDYAIGYEW
LESLKQSVHAPLAIEMTKAGELMKNGDIEGAIEVLKVFNQDSKTASAAANLCLMLRFLQGGR
RLVDAQQYADQALSIDRYNAHAQVNQGNIYMNGDLDKALNNYREALNNDASCVQALFNIGLT
AKAQGNLEQALEFFYKLHGILLNNVQVLVQLASIYESLEDSAQAIELYSQANSVPNDPAILSKLA
DLYDQEGDKSQAFQCHYDSYRYFPSNLETVEWLASYYLETQFSEKSINYLEKAALMQPNVSKWQ
MMIASCLRRTGNYQRAFELYRQIHRKFPQDLDCLKFLVRIAGDLMTEYKEYKDKLEKAEKINQL
RLQRESDSSQGKRHSANSTHSLPPSGLTGLSGSGGGTRQYSAHVPLLLDSGTPFTVAQRDM
KAEDFSYDDPVAISSRPKTGTRTTDTNIDDFGDFDDSLPD (SEQ ID NO: 35)

FIG. 12D

IFT122

Chlamydomonas

>Cr_IFT122 partial predicted peptide sequence (lacking N-terminal end)

```
HEGHFRRAPHFAYAKETLLKMDDTKGLITLYVEAEKWDDAFLAHPECRQDVYLPYAKWLSN
QDRFDEARLAYQEFGFPSSLTRILEQLCANAVVETRYADAASFYYQLAMEALKSIKNPPSNMAPS
DRSALERFTELYDRAEVYYAYEVVHKSVPSPRTTHPDTLFNASRFLLMRLPPREVPLGVSVVN
VYVVLAKQAVEAGAFKLARFAYNKLQTLVLPAAWQAEVDLASVIRSKPFSKEDLLPVCWRCS
TTNPLLNTQGDYCINCAGPFIRSFTFEHPVVEFELEPGVDDEEAGRLLGEDAGMEAARRERKAE
RQAKAAEVGGNMLRLDQNEIDRMDDAFAAQMMVPNTTIRVDRAMLRLKTAEVMVRTWPNPV
IPKQYFRSHGPAGGAALQDPADTSSSRMSSRWRRWSVARPSAAPPACAARA WRRARTPRMRVPA
ATSWAGRWAARVGPLGAPARRACPCPSSRAGRWCERGRLSGAYVRGWIPDVGE
```

(SEQ ID NO: 18)

FIG. 13A

>Cr_IFT122 partial cDNA sequence (lacking 5' end)

```
GGCACGAGGCCACTTCCGCCGCGCCGCACTTGCCTACGCCAAGGAGACGCTGCTCAAA
ATGGACGACACCAAGGGCCTGATCACGCTGTACGTGGAGGCTGAGAAAGTGGATGACGCCCT
CCTGCTGCTGCACCGCACCCGAGTGCCGGCAGGACGTGTACCTGCCCTACGCCAAGTGGCT
CAGCAACCAGGACCGCTTCGATGAGGCGCGCTGGCGTACCCAGGAGGGCGCTTCCCAGCC
TGGCCACCCGCATCCTGGAGCAGTTGTGCCAACGCCGTGGTAGAGACGCCGTACGCCGAC
GCCGCCCTACTACTATCAGCTGCCATGGAGGCCGTCAAGAGCATCAAGAACCGCCCTCC
AACATGGGCCCTCGGACCGCTCCGCCTGGAGCGCTTCACGGAGCTGTACGACCGCCGA
GGTGTACTACGCCCTACGAAGTGGTCACAAGTCCGTGACTGCCCTCCGACCCACGCCACCC
CGACACGCTCTCAACGCCCTCGCCTCCTGCTCATGCCCTGCTGCCGCCGCGAGGTGCC
GCTGGCGTCAGCGTGGTCAACGTGGTACGTGCTGGCCAAGCAGGCTGTCGAGGCCGGCG
CCTTCAAGCTGGCGCTCGCTACAACAAGCTGCAGACGCTGGTCTGCCGCCGCTGGC
AGGCGGAGGTGGACCTGGCATCCGTGGTACCCGCTCCAAGCCTTCTCAGACAAGGAGGAC
CTGCTACCGGTGTGCTGGCGCTGCTCCACCAACCCGCTGCTCAACACGCAGGCCACTAC
TGCATCAACTGCCGCCCTCATCCGCTCCTCGTACCTTCGAGCACCTGCCGTGGTGG
AGTTTGAGCTGGAGCCGGCGTGGACGACGAGGAGGCCCTGCTGGCGAGGACGCCG
GGCATGGAGGCCGCCGCGAGCGCAAGGCCGGAGGCCAGGCCAACGCCGGAGGTGG
GCCGAACATGCTGCCGTGGACCAGAACGAGATCGACCGCATGGACGACGCCCTGCCGCC
CAGATGATGGTGCCAACACCACCATCCGCTGGACCGGGCATGCTGCCGCCGCTCAAGAC
GGCGGAGGTCACTGGTGCCTGCCCCAACCCCGTACCCCAAGCAGTACTTCCGAGTC
TGGACCAAGGAGGTGCCGCTGTGCTGAGGACCCCTGCCGACACTTCTCGAGCAGGATGAGTTC
GAGATGGCGGCCGCTGGAGCGTGGACCGCCTTCAGCCGACCCACCGTGCAGGCCGAGGG
CCTGGCGCCGGCGAGGACGCCGAGGATGAGGGTCCGGCGCAACAAGCTGGCGGGCCG
TTGGCAGCGCGCTGGGCCATTGGGGGCCAGCAAGGCCGCTGCTGGCGCCCTTCCA
GCAGGGCCGCCGCTGGTGTGAGGGGGTCGCTATCGGGCGCTTACCGGGTGCCTGGTGG
ATTCCGGATGTAGGCCGGAAATAGGAGCTGCCGTAGTGGCGTTGCAGCAGGCCCTCGTAC
GCAGCAGAGGGGCACGAGGAGGACGTGAACGGGTGCTTCATGCTGCTGTGGTCTGACTT
GGTAGGACGGCGTTGGTGCATCATTAGGCTGCCCTGCCGGTCCACCATAGGAGCTGCGAT
GGCCTGAAGCAAGGCCATGCACTGGCGGGCACATGATGCATGACGGGACAGAGCACG
GGACTTGCTGGAACCAGTGTACATATGCCCGCAGAGAGACTGCCGTCTGAAGGCCGACA
AATTGGGACATGCGCGTACAGACAAACGATGATGACAGGATGACAGTTGTGCGG
CAGGGGGCTCCAAGCCCAGTTGAGGCCAGGCAGGTTGGTGAATGGGATGCACAGTG
GCAGTCTAATGCGCTGGCGCTATGAGCGTCCATGGTGTGGCGCCCTCAAGTACAAGACACC
TTATAGTAGTTCAATCTGCCCGCAAAAAAAAAAAAAAAA (SEQ ID NO: 17)
```

FIG. 13B

Human

>gi|11360072|pir||T43484 hypothetical protein DKFZp434K016.1 - human (fragment)
TLLQPLKGHKDTVYCVAYAKDGKRFASGSADKSVIWTSKLEGILKYTHNDAIQCVSYNPITHQLA
SCSSSDFGLWSPEQKSVDHKSSSKIICCSWTNDQYLAALGMFNGIISIRNKNGEEKVKIERPGGSL
PIWSICWNPSSRWESFWMNRENEDAEDVIVNRYIQEIPSTLKSAYVSSQGSEAEEEEPEEEEDDSPRD
DNLEERNDILAVADWGQKVFSYQLSGKQIGKDRALNFDPCCISYFTKGEYILLGGSDKQVSLFTKD
GVRLGTVGEQNSWWTCQAKPDNSYVVVGQCDGTISFYQLIFSTVHGLYKDRAYRDSMTDVIV
QHLITEQKVRIKCKELVKKIAIYRNRLAIQLPEKILYELYSELDSDMHYRVKEIICKFECNLLVVC
ANHIILCQEKRQLQCLSFSGVKEREWQMESLIRYIKVIGGPPGREGLLVGLNGQILKIFVDNLFAIVL
LKQATAVRCLDMMSARKKLAVVDENDTCLVYDIDTKELLQEPNANSVAWNTQCEDMLCFSGG
GYLNKASTFPVHRQLQGFVVGVNGSKIFCLHVFSISAVEVPQSAPMYQYLDRLKFKEAYQIACL
GVTDTDWRELAMEALEGLDFETAKKAFIRVQDLRYLELISSIEERKKRGETNNDLFLADVFSYQG
KFHEAAKLYKRSGHENLALEMYTDLCMFEYAKDFLGSGDPKETKMLITKQADWARNIKEPKAAV
EMYISAGEHVKAIEICGDHGWDMLIDIARKLDKAEREPLLCCATYLKKLDSPGYAAETYLKMGD
LKSLVQLHVETQRWDEAFAALGEKHPEFKDDIYMPYAQWLAENDRFEEAQKAFHKAGRQREAVQ
VLEQLTNNAVAESRFNDAAYYYWMLSMQCLDIAQDPAQKDTMLGKFYHFQRLAELYHGYHAIH
RHTEDPFSVHRPETLFNISRFLLHSPLPKDTPSGISKVKILFTLAKQSKALGAYRLARHAYDKLRGLYI
PARFQKSIELGTLTIRAKPFHDSEELVPLCYRCSTNNPLLNNLGNVCINCRQPFIFSASSYDVLHLVE
FYLEEGITDEEAISLIDLEVLRPKRDDRQLEIANNSSQILRLVETKDSIGDEDPTAKLSFEQGGSEFV
PVVVSRLVLRSMSRRDVLIKRWPPPLRWQYFRSLLPDASITMCPSCFQMFHSEDYELLVLQHGCCP
YCRRCKDDPGP
(SEQ ID NO: 36)

FIG. 13C

Caenorhabditis elegans

>Ce_Daf10 Z82266 F23B2.4
MTMKKISRKLGFGEQVCIYDLAFLKPDGSELLAADNKVYLFDVNEGGQMQLKGHKDLVYTV
AWSHNGELFASGGADKLVILWNEKHEGTLRYSHTDVIQCMFNCNPQCNILLTCALNEFGLWSTAD
KNVIKQRSVVRCCSAWNTDGTIFAIGHGDGTITLRKGTNATEEPSIIQRDNEPIWGIAFSSNRTFA
SRDSQGNPMGIIDEIMAVIDWNKTLFSYSLDGTIESKNLEFEPHCISYCLNGEYLLIGGSDKILKIYT
RKGVLLGTVAQMDHWIWSVTVRPNSQTVMAGCVDGTIACYNLVFSTVHCVDHARYANRKSMT
DVVFQNLEYRTSSNICCHDLVKKMSLYDTKLAQQLSDKIQIYKQTGGVSKNERRKQLKYTLQDTI
RKDLSFSLMVVTHGLVVCNDEKLECYDFKGKIKRSWNMKSIVRYLRLVLLGGPAHRETLVLGTTD
GGVYKVFDNDYPILLDSRKTAKCIDINANRTVLASIEDTLCVCKWSDIATGETLLQEPGCYSVVFN
TVNENLFAFTTNMLHVRTLAAPGHTTRGVGVYVLGFVKNRTFCLVQYNLIPLEVPYTIHLYQYIER
GDFKEALRIA CLGVVKNDWKYLANKALDALEFDVARKAYKRVRDRKMLRMVWEKKMKSNG
EPDAILRATILAYTKKFREA AKIFKENG FENRAMELFTDMRMFDDVQEVMTTASGETKKMLMRK
RASWARDANQPKIAAEMLISSGDLDKAALLIIDNDWLELAIEISHKIDRSDETMKKLSAYFIRKHE
FGLASRIFQSINDMKSIVDMHVNA GHWTDAFAIADRHPKYVEDVYLPYARFLAERDRFEEAQKAF
HRAGKEQEAMHVLEQLTSNSVNENRFADAGCGLNNPLGGMSCIHCTPFIISFVSDILPLIEFKIE
NDISFDEAKELIESEPLSDDDYNPLRGLKKGIKEIILNRESLSKLEQGHVIIQTFPPPLAPKFLNVMP
SITIAQCKGCNKVFDDLDFEMACLRKGHCFCRTSYDRNEAFFVDEEEDEDNTNIPSFGQFSRFS
(SEQ ID NO: 37)

FIG. 13D

IFT139

Chlamydomonas

>Cr_IFT139 partial predicted peptide sequence (lacking C-terminal end)
MADRVLALVHYYAREGYFRHVQTCNEVLKKRPGDGVLTFWRAYGLLMEGNTADAMRDLSSIQ
GNSDLELAVAQQQLLGHESAKVPDHDAIIDLQAKLEIEERTASDQPCLHLASFYLYTKSKERARGL
VERVLRNQPMVPAQVLLGWIIISQQQDDEYDMLFDESELDDALSHFEQAVEHDHNDLQALLGK
AKIMELKKQLGPCLDVLTENVRFGWFVPALVEKTRMLMMGLDWEQVTETLQRVLAADQQNIM
AQAWNCMISLTREGNNKQAAKQLQDLFSSMRQEPKNAELFFRVARPFGLACSDPTLLGITYLM
ADRAAQLRPEMAAYVVEAAAQKLMMDETTNATERFTQALQLDELNLEANAGALEAQIMAGELE
EAAGQIMFLEDMFTNAAAAGGGKRKGRTGDMDDDPMDAPSLGTSSDNPTLLYLKGLLAWKQ
GMPSEGLLERSIAALFSAAADFHPGLELYAALNPARITAMVRLLLQSIGGEPRAPTEAPSPLISK
VTRALDLLNKQAPALQESALLHARALYLNNGNLGALRKAGEILRMNPEESSAHLLICSVYVAQDK
PELA VSALDQA VSSNFAIRETPLYHVVQAKVLVANNKLDDAKRVLESAMNLPGVRTALT VQQRA
RLGRKVVEPTLHERATVYLLLADVLARQSKIPDAPEAKKYIQDAIREFEGTSEEVRVTVADCELAI
ARDVVEGALKLRRIPKESPHYVKARMAMADIYLHRHKDKAAYIKCYMDLV DHTPDYDSYCM
GEAFMQIQEPEKAVRA
(SEQ ID NO: 20)

FIG. 14A

>CrIFT139 partial Cdna sequence (lacking 3' end)

GGTAGTCGAAACGTCTCAAGTATCGGACGCACTATTGCAACTGCTTATTTGCATGGCTCC
CCCATCAATGAACCTTGCTTCGCTCCCTATGGCCTCCCATCGAGCGTGCAAGGTATCACCGTGAT
ACACATGCTAAATATACTTCGTTAATTGGAGTTACCGCGGAGGCCCTGAACATTGCCAAC
CGCTCCTGAGGAAGCAGAACGAATAGCAGTGCATACAAATAGCCATGGCGACAGGGTACTT
GCCCTGGTCCATTACTATGCTCGCAGGGCTATTAGACATGTGCAGACGGTGTGCAACGAA
GTGCTCAAGAACGGCCGGAGATGGGTACTCACATTCTGGCGTGCCTATGGACTGCTCATG
GAGGGCAACACGGCGGACGCCATCGTGACCTCTCCAGCATCCAGGGCAATTCTGACCTTGA
GCTGGCGGTGCGAGCCGCACACTACTGGGTACGAATCCGCCAAGGTGCCCCGACCACGATG
CCATCATTGACCTCAAGCCAAGCTGGAGATCGAGGAGCGCACCGCCAGCGACCAGCCCTGC
CTGCACCTGGCCTCCTTCTACCTGTATACCAAGTCCAAGGAGCGGCCGGTCTGGTGGAG
CGCGTGTGCGCAACCAGCCCACATGGTGCCGGCAGGTTCTCTGGCTGGATCATCATC
AGCCAGCAGCAGGACGACGAGTACGACATGCTGTTGACGAGTCCGAGCTGGACGACGCCCT
CAGCCACTTCGAGCAGGCGGTGGAGCACGACCACAACGACCTGCAGGCCGCTGCTGGCAAAG
CCAAGATCATGGAGCTGAAGAACGAGCTGGGGCCCTGCCTGGACGTGCTGACGGAGATCAAC
GTGCGCTTCGGCTGGTCTGGCCGGCTGGTGGAAAAGACGCGCATGCTCATGATGCTGGC
GAETGGGAGCAGGTGACGGAGACGCTGCAGCGGGTCTTGCGCGGACCAACAGAACATCAT
GGCGCAGGCCTGAACTGCATGATCTCCCTACTCGCAGGGCAACAACAAGCAGGCC
AGCAGCTGCAGGACCTGTCAGCTCAATGAACGCCAGGAGCCAAGAACGCCAGCTCTTC
TTCCCGCTCGCCCCGGCCCTCGGCCGCTGGCCTGACGCACCCCACGCTGCTGGCATT
TACCTCATGGCCGACCGCGCCGCAGCTCAGGCCAGATGGCGGCTACGTGGTGGAGGC
AGCTGCTCAGAACGCTGATGATGGACGAGACCAACGCCACGGAGCGCTTCACGCC
TACAGCTGGACGAGCTGAACCTGGAGGCCAACGCCGGCGCTGGAGGCCAGATCATGGCG
GGCGAGCTGGAGGAGGCCGGCGAGATCATGTTCTGGAGGACATGTTACCAACGCC
GGCGGCTGGCGCCGGCAAGCGCAAGGCCGGCAGCGCAGATGGACGACGCCAG
ATGGCCGACCCAGTCTGGCACCTCCGACAACCCACGCTGCTCACCTCAAGGGTCTG
CTGGCCTGGAAGCAGGGCATGCCGCTCGAGGGCCTGGTCTGCTGGAGCGCTCCATT
CTGTTCTCCGCCGCCGACTTCCACGCCAGCCTGGAGCTGTACGCCGCTCAACCG
GCCGCATACCGCAATGGTGCCTGCTGCTGCAGAGCATGCCGCTGGAGGCC
CACTGAGGCCGCGCTCCGCTCATCAGCAAGGTACCCGCCGCTGGACCTGCTGA
GGCGCCGGCGCTGCAGGAGAGCGCGCTGCTGCACGCCGCGCTGTACCTGA
TGGACGGCGCGCTGCAGGCCAGGCGAGATCCTGCCATGAACCCGAGGAGAGCTCGCG
CACCTGCTCATCTGTTCCGTGTACGTGGCGCAGGACAAGGCCAGCTGGCGCT
GACCGCCGTCAGCAACTTCCGATCCGAGACGCCCTCTGTACCACTGTT
AAGGTGCTGGTGGCCAACAAACAAGCTGGACGACGCCAGCGCTCTGGAGTCCGCC
CCTGCCGGCGTGCACAGCGCTACCGTGCAGCAGCGCGCGACTAGGGCG
TCGAGGCCACGCTGCACGAGCGGCCACCGTGTACCTGCTGCTGGCGGACGTGCTGGCG
CAGTCCAAGATAACGGACGCACCAAGAGGCCAAGAACGATCAC
CGAGGGCACCAGCGAGGAGGTGCGCGTACGGTGGCGACTGCGAGCTGGCATT
GCGACGTGGAGGGCGCGCTCAAGAACGCTGCCGACATCCCAAGGAGTCTCCG
AAGGCCGCATGGCCATGGCGACATCTACCTGCCACCGCAAGGACAAGGCC
CAAGTGCATGACATGGACCTGGTGGACCAACGCCGACTACGACAGCT
AGCGTTCATGCAGATCCAGGAGCGGAGAAGGCAGTGCAGCGCT

(SEQ ID NO: 19)

FIG. 14B

Human

>HsIFT139-1 ref|NT_005498.3|Hs3_5655 Homo sapiens chromosome 3
SFIQAGIYYYSQEKFHHVQAAA VGLEKFSNDPVLKFFKAYGVLKEDREAIQELEYSLKEIRKT VSG
TALYYAGLFLWLIGRHDKAKEYIDRMLKISRGFREAYVLRGVVDLTSKPHTAKKAIEYLEQQGIQ
DTKDVLGLMGKAMYFMMMQNYSEALEVVNQITVTSGSFLPALVLKMQLFLARQDWEQTVE MG
HRRILEKDESNIACQILT VHELAREGNMTTQATNHVRNLIKALETREPENPSLHLKKIIVVSRLVC
GSHQVILGLVCSFIERTFMATPSYVHVATELGYL FILKNQVKEALLWYSEAMKLDKDGMAGLTGII
LCHILEGHLEEAEYRLEFLKEVQKSLGSEVRAPWGYGLLQDDVLCPPPTFQCKVAWTFTLPLP
TKSAQADIGTETRSSLPQV LIFLQALLMSRKHKGEETTALLKEA VELHFSSMQIPLGSEYFEKLD
PYFLVCI AKEYLLFCPKQPRLPGQIVSPLLKQAVILNPVVAAPALIDPLYLMAQVRYSGELEN
AQ SILQRCLELDPASVDAHLLMCQIYLAQGNFGMCFHCLELGVSHNFQVVRDHPLYHLIKARALN
KAGDYPEAIKTLK MVIKLPALKKEGRKFLRPSVQPSQRASILLEV ALRLNGELHEATKVMQDT
INEFGGTPEENRTIANV DVLVLSKG NVDVALNMLRNILPKQSCYMEAREKMANIYLQTLRDRRLYI
RCYELCEHLPGPHTSLLGDALMSILEV SERPHSLAKWPPSLPSPVGEKRKTQRHFHQPEKALEV
YDEAYRQNPHDASLASRIGHAYVKAHQYT KAI EYYEAQKINGQDFLCCDLGKL LKKVNKA
EKVLKQALEHDIGVQDIPMMNDVKCLLLAKVYKSHKKEAVIETLNKVIDRWTQALALDLQSRI
LKRVPLEQPEMIPSQKQLA ASICIQFAEHYLA EKEYDKAVQSYKDVFSYLP TDNKVLMADLMFRK
QKHEAAINLYHQVLEKPGDNFLV LHKLIDL RRS GKLEDIP AFFELAKV VSSRV PLEPGFNYC RGI
YCWHIGQPNEALKFLNKARKDSTWGQSAIYHMVQICLNP DNEVGGEAFENLIPRSNTCSYMEKK
ELEQQGVSTAELLREFYPHS DSSQTQLRLLQGLCRLATREKANMEAALGSFIQIAQAEKDSVPAL
LALAQA YVFLKQIPKARMQLKRLAKTPWVLSEAEDLEKS WLLADIY CQGSKF DL AELL RRCVQ
YNKAQSCYKAYEYMGFIMEKEQSYKDAVTNYKLA WKYSHHANPAIGKATS QGARETWEGGGQ
EPHHD PRTQGLY PG CYENQRGSQ VTRPPSLLS MSPVGF KLAFNYL KDK FVEAIEICNDVSQQP
WWGGPGVVVG NPA
(SEQ ID NO: 38)

FIG. 14C

>HsIFT139-2 ref|NT_005239.3|Hs2_5396 Homo sapiens chromosome 2
INYYCQERYFHHVLLVASEGIKRYGSDPVFRFYHAYGTLMEGKTQEALREFEA KNKQDVSLCSLL
ALIYAHKDREAILES DARVKEQRKGAGEKALYHAGLFLWHIGRHDKAREYIDRMIKISDGSKQGH
VLKA WLDITRGKEPYTKKALKYFEEGLQDGNDTFALLGKVWRQNYSGALET VNQIVNFP SFLP
AFVKKMKLQLALQDW DQTVETAQRLSNKIIFSF CGRSQL LQKIQTLLEAFSLNPQQSEFATELG
YQ MILQGRVKEALKWYKTAM TLD ETSV S ALVGFIQCQLIEGQLQDADQQLEFLNEIQQSIGKSAV
LIYLHAVLAMKKNRQEEVINLLNDVLDTHFSQLEGPLGIQYFEKLPDFLLEIVMEYLSFCPMQ
VS NYGFL LGDIEAAFNNLQHCLEHNPSYADA HLLA QVYLSQEKVKLC SQS LE LCL SYDF KVQVR
DYPL YH LIKAQSQKKM GEIADA IKTLMAMSLPGM KRIGASTKS KDRKTEVDT SHRLS IFLELIDV
HRLN G EHEATKVLQDAI HEFSGT SEE VR VTIANAD LALA QGDIER ALSILQNVTAEQPYFIEAREK
MADIYLKHRKDMLYITC FAITYYE AALKTGQKNYLCYDLAELLKLK WYD KAEKV LQHALAH
EPGMKARELQARVLKRVQMEQPD A VPAQKHLAAEICAEI KHSV AQRDYEKA IKFYREAL VHCE
TDNKVDNYMTLSRLIDLLRRCGKLEDVPRFFSMAEK RNSRAKLEPGFQYCKGLYLYWTGEPNDA
LRHFNKARKDRDWGQNALYNMIEICLNP DNETVGGEV FENLDGDSNSTEKQESVQLA VR TAEKL
LKE LKPQT VQGHVQLRIMENY CLMATKQKS NVEQALNT FTEIA AASEKEH IP ALLGMATAYMILKQ
TPRARNQLKRIAKMNWN AIDAEEFEKSWLLAD IYIQS AKYDMAEDLLKRC LRHNRSCCKAYEY
MGYIMEKEQAYTDAALNYEMA WKYSNRTNPAVG
(SEQ ID NO: 39)

FIG. 14D

Caenorhabditis elegans

>gi|7511091|pir||T29012 hypothetical protein ZK328.7 - Caenorhabditis elegans
MKVAANELAISTIHFLPGHIEKAKASIMMKDWRGVMDCIMNADQPEGSNPYIEVLRTVHGICYAG
EVSMLKRTLQLLKSLDENEATNHVLYARITKLLVSISGRDEKILRHARDFLTRALKISRKPDYVAL
SMRIAFLGLGGAKEVSTLSQELVALDCEDSYAVLSSVVSMLMISRVSDARAQFDILPSAHPKLLESPL
YYLIASVLAKQSKDKSFENFRQHIENLVEMLRNQLQSPPFGLDYLSLFSSDLYSAVEQCDFYPLV
PIKAPDDCMKLTAKTLQMIYDVAPGLAHCTLQLARN SYLCNTNAAEKWIEKVLDKDDSLADAHI
LRAELILDRRGGKITDADDALVTGLNFNFKLRETSLYHLIKSKTFKKRNENDEAIKTLKMA LQIPRKE
PSKNLFQPKESADTHKISVQLELIDLTLQHMKRIQEAEETTMTDALA E WAGQPEQDQLVIAQAQLYL
TKGHVERALGILKKIOPGQSNFHLSRIKMAE IYLEEKDKRMFAACYRELLKVEATPGSYSLLGDA
FMKVQEPE DAINFYEQALKM QSKDVQLA EKIGEAYVMAHLYSKAVNFYESSMNIYKDKNMRLK
LANLLLKL RNRFEKCEKVLRAPFERDPEPVGTETIQT YIQFLLLAE CHEMMMDNVPEAMNDFEKA
LHSRIQDKTLTAALKKEGARICNLQAE LYRRREFSQAVDICKQALAYHETDLKANLLSKIFKEE
NKWTLV LQPCQTVIQVDPHNDEANSILADFYYIRSEA A HASTSYTLLNTNPQHWALS RVVELF
CRNGEQNAAEKHLDRAKEVNPRCVTESGYNCRGRFEWYTGDQNEALRYY SRTKDSAAGWREK
ALYYMIDICLNPDNEIIDENS VENPETTKIYL VSELWKKLVNSKNLPNITSIYSEN FQSTDRFL LAQ
NFIRMHTTDKS AIQALDEFNRMAFNADRSQVTNVGA VFGVARGHVLLKQVQKAKTVLKM VNG
RVWNFDDSDYLEKCWLMLADIYINQN KNDQAVTFLDVFKYNCNCNLKAFELYGYMREKEQKYV
EAYKMYEKA FMATKERNPGFGYKLAFTYLKAKRLFACIETCQKVLDLNPQYPKIKKEIMDKAKA
LIRT
(SEQ ID NO: 40)

FIG. 14E

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Che-2

Chlamydomonas

>Cr_Che-2 predicted peptide sequence

MRLKVKQSSANVHSELTAAVGWNVWNELFTCSDDQTIHKWNMLGEPEQKVSTLDAYFTDMHW
YPVSSKKTQAGGTDVFAVCTDGSVKILSRTRVEKSIEGHKGACISLRWSYDGTALATAGEDGS
VKIWSRNGMLRSTLAQADSPVYSIVWAYDCDQLCYCTGSNVVIKSLSSNAKQNAWKAHDGVVL
KVDWSPINHLIITGGEDCKYKVWDSFGRLFQSGLFDYPVTSAWAPSGELFAVGGFNTLQLCDR
MGWAYSKIHLNDTSIMTLSWTADSTQLAGGGGSGGVFGQVVLDIALEDGKMQVTVVDDMRIV
VNDILNEAADELPEFRDRVIKVSLSGYGYLIVATATQCHVYNTTNGTPHIFDLKDTVTLLLQAERH
FLLLDNSAGIQIYTTEGRQICNPRFQGLRTELLNAQMITSNDTIAVLDQQASGTTVRFFDTAQGRP
VGEPWQHTLEVKEIALSQAGTINDRQLIVIDRNRLYLLPVMKRHVAKLAAMCDSARWHDSTM
LSAMVDQRLCVWYYPSEVVYDKDLAKTRYTKSDSDFGKSAQIQLFAGNRCLVRRSDGVLVSAA
TSPYPAVLYDMIRKQQWDKATRLCRFIKDPTMWATLAAMAMAAKELNTAEVAFAAIDEVDKTH
FVRKVKQIPTEEGRNAELAVYRRKPEEGESILLQAGLVFRAIKLNKLFNWERALXLATQHKQHQD
TVLWYRQOFLKNAKLAESITRFQMNNESVVVDQAAVKKKIEEERIKESQRPGAKRYV

(SEQ ID NO: 22)

FIG. 15A

>Cr_Che-2 cDNA sequence

ATCGCTCTCAAGGTCAAGCAGTCCAGCGGAATGTGCACAGCGAATTAAACAGCAGCTGTGGG
CTGGAATGTCTGGAATGAACTGTTCACTTGTAGCGACGACCAGACTATTACAAATGGAACAT
GCTGGGGAGCCAGAGCAGAAGGTCAAGCAGTCTGGACGCATACTTCACGGATATGCACTGGT
ACCCCGTGAAGAACGCAAGCAGGCCAGGACGTATTGGCTGGCGTGCACA
GACGGCTCTGTAAAAATCCTCAGCCGACGGGCCGTGGAGAAAGTCCATTGAGGGGCACAA
GGCGCGTGCATCTCGCTCGCTGGAGCTATGACGGGACGGCACTGGCACGGCGGGCGAGG
ACGGTCTGGTAAAGATCTGGTGGCAACGGCATGCTGCGCTCACGCTAGCGCAGGGGAC
AGCCCCGTGTACTCGATTGTGTGGGCCTACGACTGCGACCAGCTGTGCTACTGCACCGGCTCC
AACGTGGTCATCAAGTCGCTGCTCCAACGCCAACGAGAACCGTGGAAAGGCGACGACGG
CGTGGTCTCAAGGTGGACTGGAGCCCCATCAACCCACCTCATCATCACAGGGCGAGGACT
GCAAGTACAAGGTGTGGACAGCTTGGCGCTGCTGTTCCAGAGCAGGGCTGTTGACTACC
CGGTACGTCGGTGGCGCCAGGGTGGACCTGGCGCTGGAGGACGGCAAGATGCAGGTGACGGTGG
TGGACGACATGCGCATTGGTGAAACGACATCTGAACGAGAACCGGACGAGCTGCCCAG
TTCCGTACCGCGTCAAGGTGCGCTAGGGTACGGCTACCTGATGTCGGCCACCGCGACG
CAGTGCCACGTGTACAACACCAACCTGGCACGCCACATCTTGACCTAAAGACACG
GTCACCCCTGCTGCTGCAGGGTGTGAGCGGACTTCTGCTGCTGGACAACCTGGCGGGCATCCAG
ATCTACACCTACGAGGGCCAGATCTGCAACCCGGCTTCCAGGGCTGCGACCGAGCTG
CTGAACGCGCAGATGATCACGCTGCTCCAACGACACGATAGCGGTGCTGGACCAGCAGGCCAG
CGGCACCAACCGTGCCTTTCGACACGGCCAGGGCCGGCAGTGGCGAGCCGTGGCAGC
ACACGTTGGAGGTGAAGGAGATCGCGCTGAGCCAGGGGGCACCATCACGACCCAGCTC
ATCGTCATCGACCGCAACCGCAGCTGTACCTGCTGCCCCTGATGAAGGCCACGTGGCAAG
CTGGCGGCCATGTGCGACTCGCGCGCTGGCACAGCAGCAGGCCATGCTGTCGCCATGGTG
GACCAGCGCCTGTGTGTGGTACTACCCAGCGAGGTGTACGTGGACAAGGACCTGCTGGCC
AAGACCGCTACACCAAGTCCGACTGGACTTGGCAAGTCGGCCAGATCCAGCTTCTGCC
GGCAACCGCTGCTGGTGCCTCGACGGCGTGTGGCTCCGCCACCTGCCCTAC
CCTGCCGTACTGTACGACATGATCCGCAAGCAGCAGTGGACAAGGCCACGCCGTGTGTC
CTTCATCAAGGACCCACCATGTGGGCCACGCTGGCGCGATGGCCATGGCGCTAAGGAGC
TGAACACGGCGAGGTGGCGTTCGCGCATTGACGAGGTGGACAAAACGCACTTGTGCGC
AAGGTGAAGCAGATCCCCACGGAGGGAGGGCCGAAACGCCAGCTGGCGGTACCGCGCA
AGCCCGAGGAGGGCGAGTCCATACTGCTGCAGGCCCTGGCTTCCGCCATCAAGCTG
AACATCAAGCTTCAACTGGAGCGCGCTGSACCTGGCCACGCAGCACAAGCAGCACCA
GGACACGGTGCTGTGGTACCGCCAGCAGTCCATAAGAACGCCAAGCTGCCAGTCCATCAC
GCGCTTCACTGCAGATGAACGAGTCGGTGGTGTGGACCAAGGCCGGTGAAGAAGAAGATCG
AGGAGGAGCGCATCAAGGAGTCGAGCGGCCAGGCCAGCGCTACGTGTAA

(SEQ ID NO: 21)

FIG. 15B

Human

>Hs_Che-2 gi|7243129|dbj|BAA92612.1| KIAA1374 protein [Homo sapiens]
IELVSCVGWTTAEELYSCSDDHQIVKWNLLTSETTQIVKLPPDIYPIDFHWFHKSLGVKKQTQAESF
VLTSSDGKFHLISKLGRVEKSVEAHCGAVLAGRWNYEGTALVTGEDGQIKIWSKTGMLRSTLA
QQGTPVYSVAWGPDSEKVLVYTAGKQLIICKPLQPNAKVLQWKAHDGIILKVDWNSVNDLILSAGED
CKYKVWDSYGRPLYNSQPHEHPITSVAWAPDGEFLFAVGSFHTRLCDKTGWSYALEKPNTGSIFN
IAWSIDGTQIAGACGNNGHVVFAHVVEQHWEWKNFQVTLTKRRAMQVRNVLNDAVDLLEFRDRV
IKASLNYAHLVVSTSLQCYVFSTKNWNTPIIFDLKEGTVSLILQAERHFLLVDGSSIYLYSYEGRFIS
SPKFPGMRTDILNAQTVSLNSNDTIAIRDKADEKIIFLFEASTGKPLGDGKFLSHKNEILEIALDQKGL
TNDRKIAFIDKNRDLCITSVKRGKEEQIQLGTMVHTLAWNNTCNILCGLQDTRFIVWYYPTVY
VDRDILPKTLYERDASEFSKNPHIVSFVGNQVTIRRAD GSLVHISITPYPAILHEYVSSSKWEDAVRL
CRFVKEQTMWACLAAMA VANRDMTTAEIA YAAIGEIDKVQYINSIKNLP SKESKMAHILLFSGNI
QEAEIVLLQAGLVYQAIQININLYNWERALELAVKYKTHVDTVLA YRQK FLETFGKQETNKRYLH
YAEGLQIDWEKIKAKIEMEITKEREQSSSSQSSKSIGLK P
(SEQ ID NO: 41)

FIG. 15C

Caenorhabditis elegans

>Ce_Che-2 gi|4468141|emb|CAB38019.1| CHE-2 protein [Caenorhabditis elegans]
MKLKLSASRKTRHTEMVCGVGWIGTEAILSAADDHVFLNTATNESQQILNMPETFFPTSLHIFP
RSQTKGQNDVFAVSTSDGKINILSRNGKVENMVDAHNGAACARWNSDGTGLSSGEDGFVK
MWSRSGMLRSVLAQFATAVYCVAWDSTSSNVLYCNADHCYIKSLKMQVAPIWKWAHDGIILCCD
WNPTSDLIVTGGEDLKFKVWDGFGQILFNSSVHDYPITSISWNTDGLFAVGSHNILRLCDKSGWS
HSLEKMNAGSVMALSWSPDGTQLAVGTAAGLVFHAIIDKRLTYEEFEIVQTQKTVIEVRDVSE
VSRETLETKERISKIAILYKYLIVVTSSHIIYIYSSKNWNTPTMIEYNERTVNIIVQCEKIFLVS DGMTIT
IFTYEGRKLINLNPPGQVMALLDERKIDLANDTLVVRDRADNKVLHFFDPTTGKAQGDGNLKHEH
DIVE TVNQCGPLNDRNVAFRDQIGAVHIAMVKTGVSQRMVKIGSLVEQLVFNDVTNMLCGISE
GKIAVVPLPNVAFHDRNLLQKSLIQKNIGSVGKFPQLANFAGNTIVRKS DGC LLPTGILPFYGT LIT
MASQSKWDQAIRLCRSIGNDTMWATFAGLA VLHN MIVMEIAYAALEDDEKVSLINEIKDKTDK
ETRQAMQVVL TGKLADADVLLERSGLSFRSLMLNIQMFKWKRALEGLK NKQWLEIVMGYREK
YLKNCGQKETDPLFLKHMSEVEIDWVHIRELIAAEKAKGNN
(SEQ ID NO: 42)

FIG. 15D